Faithful execution of such a relamping schedule will, over a period of years, reduce the signal failure due to lamp burn-outs to about one-tenth the number which would be obtained if the lamps were left in the signals until they burned out.

Circuit Polarity at Relay Contacts

"Should the positive side of a signal circuit be connected to the 'heel' of a relay contact so that the direction of current flow is from metal to carbon? Why?"

Recommends That Positive Side of the Circuit Be Connected to Front Contact Post for Inductive Loads

By R. M. GILSON
Electrical Engineer, Union Switch & Signal Company
Swissvale, Pa.

WE have just completed a series of tests on 10-volt d-c. circuits which tend to show that the proper method of connection depends upon the character of the load. If the load broken by the contact is an inductive one, the positive lead from the battery should be connected to the carbon *front* contact post, so that the current will flow from the post to the metal tip of the contact finger. This connection gave less wear at the contact surface of the carbon and lower and more uniform contact resistance as the life of the test progressed, than when the flow of current was in the opposite direction. Furthermore, with positive battery connected to the carbon, the metal tip remained clean throughout the test, whereas with negative battery connected to the carbon, the metal tip of the contact finger became completely coated with carbon dust.

For non-inductive resistance and lamp loads, however, the results of the tests were generally the opposite of those described above for inductive loads, i. e., slightly less wear and lower contact resistance throughout the tests were obtained with the negative side of the battery connected to the front contact post. Some carbon dust was deposited on the metal finger tips under these tests for both directions of current flow. The difference in the results obtained with reversal of polarities for non-inductive loads was by no means so marked as in the case of inductive loads.

From the results of our tests, therefore, it would appear that the positive side of the circuit should be connected to the front contact post for inductive loads and to the heel of the contact finger for non-inductive loads. If the railroad wishes to standardize on a single polarity, the connection of the positive side to the front contact post is preferable, on account of the small amount gained by the opposite connection for non-inductive loads.

Extensive Laboratory Tests Reveal Absolutely No Difference in Contact Functioning with Reversal of Current

By W. K. HOWE
Chief Engineer, General Railway Signal Company,
Rochester, N. Y.

THE question of directional effect of current on relay contacts has been one which we have repeatedly met from time to time. We have made extensive laboratory tests along these lines, and, so far as we are able to determine, there is absolutely no difference in the functioning of a contact with a change of direction of the current through the contact. We have run contacts continuously under various load conditions and various conditions of interruption, both with positive and negative energy applied to the front posts. All of our tests have indicated that the contact resistance characteristics are identical in both cases. In view of these tests, we do not believe that anything can be gained, so far as contact operation is concerned, by standardizing the polarities of the connection.

While Standardization of Connections Has Some Advantages There Is No Valid Reason for Insisting on One Scheme

By A. VALLEE
Supervisor of Signal Construction, Delaware & Hudson,
Albany, N. Y.

AS far as practical, it is the practice on the Delaware & Hudson to connect the positive side of all signal circuits to the heel of the relay contact. There are circuits, however, where this practice cannot be followed to obtain the results desired. For instance, in the case where it is desired to use the front and back contacts in connection with the heel, and where it is necessary that one relay be energized and another relay de-energizd to complete a circuit, it is impossible to follow this practice. Again, where certain types of color-light signals are used, and it is desired to reverse the polarity of the circuit, under certain conditions, the above mentioned practice cannot be followed.

From my own personal observations, I can see no good reason why the positive side of the circuit should be connected to the heel of a relay contact, other than as a matter of standardization. As mentioned above, to obtain certain results, it is absolutely necessary that the reverse condition exist and where this condition exists, the operation is certainly satisfactory, or such circuits would not be installed.

Brief on Train Control Filed With Commission

Washington, D. C.

ASSERTING that there has been a "marked change and let-down in the actual requisites demanded by the Interstate Commerce Commission for approval of installations of train-stops or train-control, though there has been no change in its specifications and requirements as set forth in Order 13,413," Charles A. MacHenry, president of the Hudson Train Control Holding Corporation, has filed with the commission a brief stating that:

"Approvals of installations have been given to the General Railway Signal Company's device, the Union Switch and Signal Company's device, and the National Safety Appliance Company's device, which do not comply with requirements of the commission.

"Approval has been given to installations of devices which have inherent in the device, continued danger of false clear failures.

"Approval has been given by the commission to installations which will not function under weather conditions which permit ordinary train movements.

"Approval has been given by the commission where the integrity of safety features of the device depend upon maintenance instead of inherent safety of design and construction. Insistence upon inherent safety of design and construction has been abandoned.

"The hazardous human element in maintenance has been allowed by the commission to supplant inherent safety of design, fundamental ruggedness of construction, and integrity of operation without maintenance.